

CLAIMS

Having thus set forth the nature of the invention, what is claimed herein is:

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1. A method of accessing the interior of a chromatography column comprising the steps of:
- a) providing a chromatography column having a cylinder with a plunger connected to a drive system, said plunger moveable within a cavity of the cylinder in an operational mode;
 - b) raising the plunger with the drive system a predetermined distance above a top of the cavity to a first maintenance position;
 - c) performing intrusive maintenance within the column without removing the plunger from the column; and
 - d) lowering the plunger to an operational position with the drive system.
2. The method of claim 1 wherein the step of the intrusive maintenance performed further comprises replacement of a screen connected to the plunger by at least a nut.
3. The method of claim 2 wherein the step of the replacement of the screen further comprises removing the nut located substantially at the center of the plunger.

4. The method of claim 2 wherein the step of replacement of the screen further comprises removing the distributor plate.

5. The method of claim 1 wherein the step of raising the plunger a predetermined distance further comprises raising the plunger at least six inches.

6. The method of claim 5 wherein the step of raising the plunger a predetermined distance further comprises raising the plunger about one foot.

7. The method of claim 1 further comprising the step of engaging a safety mechanism after raising the plunger, and disengaging the safety mechanism before lowering the plunger.

8. A method of accessing the interior of a chromatography column comprising the steps of:

a) providing a chromatography column having a cylinder connected to base in an operational mode, and a drive system;

b) raising the cylinder a predetermined distance above the base with the drive system to a first maintenance position;

c) performing maintenance within the column; and

d) lowering the plunger to the operational mode with the drive system.

9. The method of claim 8 wherein the drive system is connected to a plunger in the operational and further comprising the step of raising the plunger with the cylinder during the step of raising the cylinder the predetermined distance.

10. The method of claim 8 wherein the step of performing maintenance further comprises removing a screen.

11. The method of claim 10 wherein the step of providing a chromatography column further comprises locating the screen at least partially between the cylinder and the base in the operational mode.

12. A chromatography column comprising:

a drive system coupled to a plunger in an operational mode; and

a cylinder connected to a base, said plunger adapted to move within the cylinder in the operational mode; and

said drive system moves the cylinder a predetermined distance above the base for a first maintenance procedure.

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13. The chromatography column of claim 12 wherein the drive system moves the plunger at least six inches above the top of the cylinder for a second maintenance procedure.
14. The chromatography column of claim 12 further comprising safety rods located between the cylinder and the base during the first maintenance procedure.
15. The chromatography column of claim 12 wherein the first predetermined distance is at least six inches.
16. The chromatography column of claim 15 wherein the first predetermined distance is at least one foot.
17. The chromatography column of claim 12 wherein the drive system moves the plunger a second predetermined distance above a top of the cylinder for a second maintenance procedure.
18. The chromatography column of claim 17 wherein the second predetermined distance is at least six inches.

19. The chromatography column of claim 18 wherein the second predetermined distance is between about six and about twelve inches.

20. The chromatography column of claim 12 wherein the drive system further comprises hydraulically driven pistons coupled to the plunger.

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